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RAILROAD CROSSING STRUCTURE

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FIG. 1

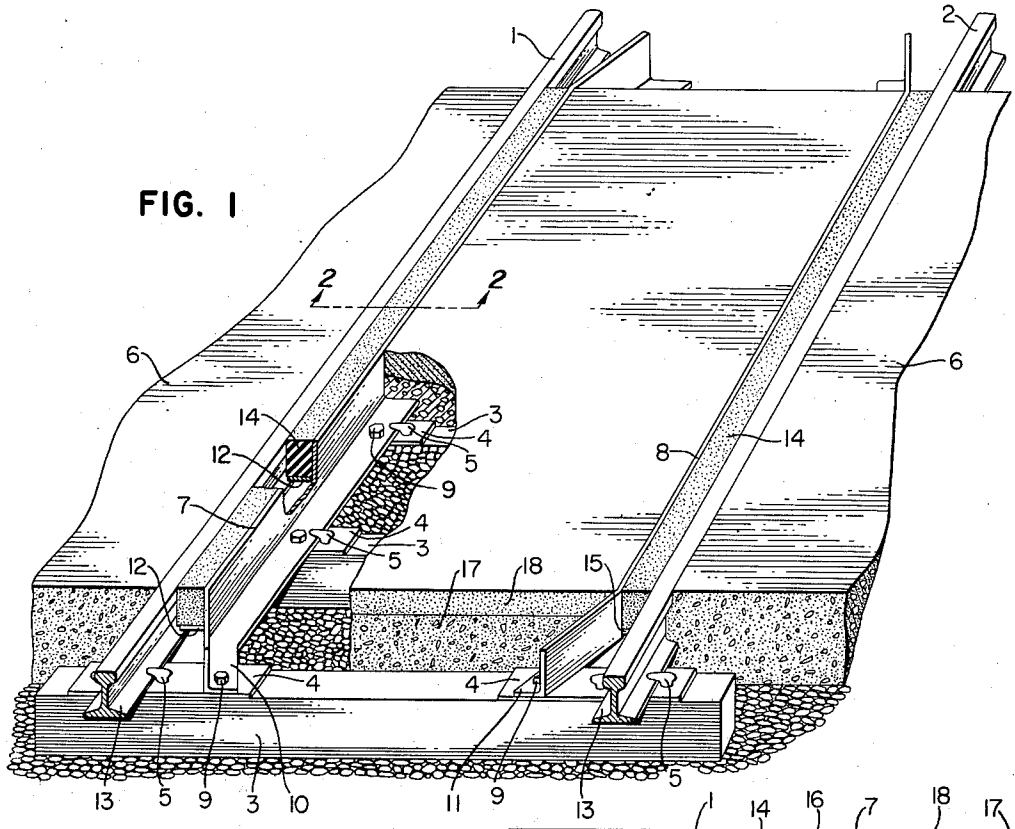


FIG. 2

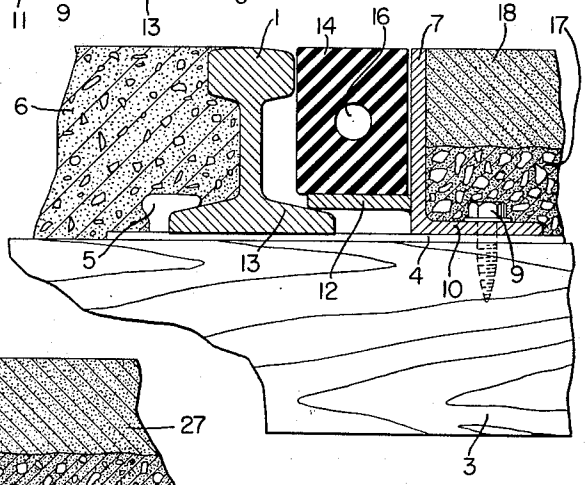
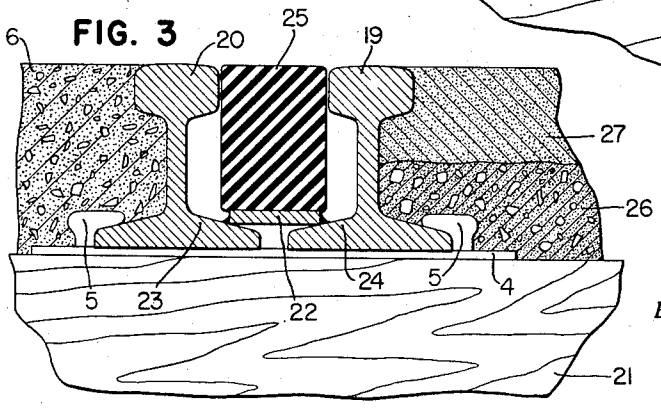


FIG. 3



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RAILROAD CROSSING STRUCTURE

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This invention relates to a railroad crossing structure and more particularly to a structure which provides a new and improved vehicle crossing surface across railroad tracks.

There are many types of railroad crossing structures to provide vehicle crossing areas and are, in general, satisfactory as long as they are properly maintained inasmuch as the vehicles that cross the railroad have pneumatic tires of substantial diameter. In the usual crossing structure, there is a substantial opening along the inside of each rail to provide clearance for the railroad car wheel flanges as they pass over the rails. Since the vehicle wheel has a pneumatic tire of a substantial diameter, the opening has no appreciable effect on the vehicle as it crosses the track.

The usual railroad track crossing constructions do not provide a satisfactory crossing surface for small-wheeled and/or solid-tired vehicles such as hand trucks, electric lift trucks etc. Many plants have railroad sidings in or adjacent the plant or between plants which are of necessity, crossed many times by such vehicles in normal plant operations. When the small wheeled vehicles cross the tracks, the space along the inside of each rail in the usual crossing construction, causes severe jolting of both the vehicle and the operator. As the result, the maintenance costs are extraordinarily high and the life expectancy of the vehicles is materially reduced. In order to provide a satisfactory crossing structure to meet such conditions, such structures must necessarily provide a substantially unbroken crossing surface and at the same time not interfere with the wheel flanges of any train passing over the rails. It is therefore an object of the invention to provide an improved railroad crossing structure that presents a substantially unbroken vehicle surface and at the same time will not interfere with the train wheels.

Another object of the invention is to provide a simple and relatively inexpensive crossing structure that may be readily installed at any desired place along the tracks.

Another object of the invention is to provide a crossing structure which requires little and infrequent maintenance.

A further object of the invention is to provide a crossing structure in which the parts subjected to wear may be readily replaced without tearing up the entire crossing.

A still further object of the invention is to provide a crossing structure that may be installed on the present track-supporting structure so that it will move with the railroad track as the trains move over the track.

These and other objects will appear hereinafter as the description of certain preferred embodiments of the invention proceeds, the features, arrangements and combinations being clearly pointed out in the specification and in the claims thereunto appended.

In the drawings:

Fig. 1 is a perspective view of a railroad crossing;

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1; and

Fig. 3 is a similar sectional view of a modification of the invention.

Referring to Fig. 1, a typical single track crossing is illustrated in which rails 1 and 2 are mounted on a series of ties 3 in the conventional manner with a plate 4 between the rail and tie and the rail and plate held in position by means of the usual spikes 5. The road surface 6 is formed snugly against the outside of each of the rails 1 and 2 and flush with the rail surface so that an unbroken surface between the road and the rail is formed. On the inside of each of the rails 1 and 2 and spaced therefrom retaining members 7 and 8 extend substantially parallel to the rail for the crossing length and are supported on the plates 4 with the top edges of the retaining members 7 and 8 substantially flush with the rail surfaces. As shown the retaining members 7 and 8 are lengths of angle iron and preferably are fastened to the ties 3 by the means of lag bolts 9 extending through the flanges 10 and 11 of the retaining members 7 and 8, respectively, and the plates 4 into the ties 3. If desired, the ends of each of the retaining members 7 and 8 may be fastened so as to extend angularly away from the rails 1 and 2 beyond the crossing surface.

As best illustrated in Fig. 2, supporting member 12 extends substantially at right angles to and away from the flange of the retaining member 7 so as to bridge the space between the retaining members and the flange 13 of the rail 1 to form a firm support for the cushion element 14. It is to be understood that a supporting member 15 is provided between retaining member 8 and rail 2. Preferably the supporting members 12 and 15 are rigidly attached to the retaining members 7 and 8 during the installation of the crossing structure such as by welding with the opposite end resting on the flange 13 of the rail. The supporting members 12 and 15 thus form open-topped chambers between the retaining members 7 and 8 and the rails 1 and 2 respectively. A cushion element 14 of generally rectangular cross section formed preferably of a resilient material such as rubber, natural or synthetic, is positioned on the supporting members 12 and 15 so as to substantially bridge the space between the retaining members 7 and 8 and the head of the rails 1 and 2. A material having a Shore durometer type A hardness of about 65 has been found to function satisfactorily. The upper surface of the cushion element 14 is substantially flush with the top of the retaining members 7 and 8 and the rails 1 and 2 but if desired, may extend slightly above. If desired a cored opening 16 may be formed in the cushion element 14 to permit easier deformation of the element 14 as a vehicle passes over.

As shown in Fig. 1, after the retaining members 7 and 8 and cushion elements 14 are in place, the space between the legs of the retaining elements 7 and 8 is filled partially with slag 17. A layer of asphalt 18 is placed thereover to form a road surface flush with the top of the retaining members 7 and 8 to complete the crossing structure.

In Fig. 3 a modification is illustrated in which the retaining member is a section 19 of rail similar to that used in the main rail 20. The rail section 19 is mounted on the tie 21 in the usual manner so that the rail section 19 is spaced from and parallel to the main rail 20 of the crossing. A supporting member 22 is firmly attached to the flange 23 of the main rail 20 and flange 24 of the rail section 19 to provide an open-top chamber between the rail 20 and rail section 19. The cushion element 25 is then placed on the supporting member 22 with the top of the cushion element 25 substantially flush with the top of the rail 20 and the rail section 19. A similar assembly (not shown) is provided along the inside of the other main rail and the space between the rail sections serving as retaining members is then filled partially with a slag layer 26. An asphalt covering 27 is then put down

so as to be substantially flush with the surface of the rail sections to complete the crossing structure.

In either of modifications of the crossing structure described, a retaining element (not shown) may be attached preferably to the supporting members adjacent the ends of the cushion element. In most installations, the element will not be needed to prevent longitudinal movement of the cushion element but in some instances it may be desirable.

The railroad crossing structures as described provide a smooth, unbroken crossing surface that will allow any type of vehicle wheel to pass thereover without any noticeable jolting or jarring. The resilient cushion elements 14 or 25 are readily distorted by the flanges of the railroad wheel as they move over the rails so that the cushion elements do not interfere with the movement of the train on the track. After the train passes the cushion element 14 or 25 returns to its normal position due to the resilience of the material and the durability on the cushion elements has been found to be excellent.

While certain representative embodiments and details have been described and shown for the purpose of illustrating the invention, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit or scope of the invention.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. A railroad crossing wherein at least a pair of rails is mounted on spaced ties extending transverse thereto with the spaces between the rails and adjacent the outside of each rail being filled to form a traffic crossing surface across the rails characterized by the filling between the rails comprising a rigid retaining member adjacent to and spaced from the inside of each rail with the top of the retaining member substantially flush with the head of the adjacent rail, a supporting member extending between the retaining member and the rail with one edge firmly attached to said retaining member and the opposite edge resting on the top of the bottom flange of the rail, an elastic deformable resilient cushioning member on said supporting member with the top surface thereof substantially flush with the head of the rail and the top of the retaining member, the sides of said cushion element engaging the head of the rail and the retaining member to bridge substantially the entire space between the rail head and retaining member and filler material between and abutting the sides of the retaining members opposite the cushion elements and substantially flush with the top thereof whereby a substantially unbroken traffic crossing surface is formed between the rails.

2. A railroad crossing wherein at least a pair of rails is mounted on spaced ties extending transverse thereto with the spaces between the rails and adjacent the outside of each rail being filled to form a traffic crossing surface across the rails characterized by the filling between the rails comprising a rigid angle iron retaining member adjacent to and spaced from the inside of each rail with the top of the vertical leg of the retaining member substantially flush with the head of the adjacent rail and the horizontal leg resting on the ties and extending away from the rail, a supporting member extending between the vertical leg of the angle iron and the rail with one edge firmly attached to said vertical leg and the opposite edge resting on the top of the bottom flange of the rail, an elastic deformable resilient cushioning member on said supporting member with the top surface thereof substantially flush with the head of the rail and the top of the retaining member, the sides of said cushion element engaging the head of the rail and the retaining member to bridge substantially the entire space between the rail head and retaining member and filler material between and abutting the sides of the retaining member opposite the cushion elements and substantially flush with the top thereof whereby a substantially unbroken traffic crossing surface is formed between the rails.

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